FCC RF Test Report

APPLICANT	:	Motorola Mobility LLC
EQUIPMENT	:	Mobile Cellular Phone
BRAND NAME	:	Motorola
MODEL NAME	:	XT2245-1
FCC ID	:	IHDT56AF9
STANDARD	:	FCC Part 15 Subpart E §15.407
CLASSIFICATION	:	(NII) Unlicensed National Information Infrastructure
TEST DATE(S)	:	Jun. 28, 2022 ~ Jul. 06, 2022

We, Sporton International Inc. (Shenzhen), would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (Shenzhen), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia

ACCREDITED Cert #5145.01

Sporton International Inc. (ShenZhen)
1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055
People's Republic of China

TABLE OF CONTENTS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR253001F	Rev. 01	Initial issue of report	Jul. 30, 2022

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.403(i)	6dB, 26dB and 99% Occupied Bandwidth	> 500kHz	Pass	-
3.2	15.407(a)	Maximum Conducted Output Power	≤ 30 dBm	Pass	-
3.3	15.407(a)	Power Spectral Density	≤ 30 dBm/500kHz	Pass	-
3.4	15.407(b)	Unwanted Emissions	15.407(b)(4)(i) &15.209(a)	Pass	Under limit 14.86 dB at 65.890 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 9.12 dB at 0.270 MHz
3.6	15.203 & 15.407(a)	Antenna Requirement	15.203 & 15.407(a)	Pass	-

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1 General Description

1.1 Applicant

Motorola Mobility LLC
222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

1.2 Manufacturer

Motorola Mobility LLC
222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2245-1
FCC ID	IHDT56AF9
IMEI Code	Conducted:357398930010852 Conduction: 357398930014391 Radiation: 357398930011165
HW Version	DVT2
SW Version	S3SSM32.29
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Channel Frequency Range	5745 MHz ~ 5825 MHz
Maximum Output Power	**<5745 MHz ~ 5825 MHz>** 802.11a : 18.82 dBm / 0.0762 W 802.11n HT20 : 18.73 dBm / 0.0746 W 802.11n HT40 : 18.06 dBm / 0.0640 W 802.11ac VHT20: 18.07 dBm / 0.0641 W 802.11ac VHT40: 17.31 dBm / 0.0538 W 802.11ac VHT80: 16.83 dBm / 0.0482 W
99% Occupied Bandwidth	802.11a : 16.78 MHz 802.11n HT20 : 17.93 MHz 802.11n HT40 : 36.66 MHz 802.11ac VHT80 : 75.62 MHz
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
Antenna Type / Gain	PIFA Antenna with gain -6 dBi

Note: For 802.11n HT20 / ac VHT20 and 802.11n HT40 / ac VHT40 mode, the whole testing have assessed only 802.11n HT20/HT40 by referring to their maximum conducted power.

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Specification of Accessory

Specification of Accessory				
AC Adapter (US)	**Brand Name**	Motorola (Salcomp)	**Model Name**	MC-681L
AC Adapter (EU)	**Brand Name**	Motorola (Salcomp)	**Model Name**	MC-682L
AC Adapter (UK)	**Brand Name**	Motorola (Salcomp)	**Model Name**	MC-683L
AC Adapter (AU)	**Brand Name**	Motorola (Salcomp)	**Model Name**	MC-685L
AC Adapter (AR)	**Brand Name**	Motorola (Salcomp)	**Model Name**	MC-686L
AC Adapter (BR)	**Brand Name**	Motorola (Salcomp)	**Model Name**	MC-687L
AC Adapter (CHILE)	**Brand Name**	Motorola (Salcomp)	**Model Name**	MC-689L
Battery 1	**Brand Name**	Motorola(ATL)	**Model Name**	NP40
Battery 2	**Brand Name**	Motorola(SCUD)	**Model Name**	NP40
Earphone	**Brand Name**	Motorola (Lyand)	**Model Name**	MI181C
USB Cable	**Brand Name**	Motorola(Saibao)	**Model Name**	SC18D24968

1.7 Testing Location

Sporton International Inc. (Shenzhen) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Test Firm	Sporton International Inc. (Shenzhen)		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	CO01-SZ TH01-SZ	CN1256	421272

Test Firm	Sporton International Inc. (Shenzhen)		
Test Site Location	101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Fenghuang Community, Fuyong Street, Baoan District, Shenzhen City Guangdong Province China 518103 TEL: +86-755-33202398		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	03CH03-SZ	CN1256	421272

1.8 Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH03-SZ	AUDIX	E3	6.2009-8-24
2.	CO01-SZ	AUDIX	E3	6.120613b

1.9 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 15 Subpart E
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane) were recorded in this report.

b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5745-5825 MHz U-NII-3	149	5745	157	5785
	151*	5755	159*	5795
	153	5765	161	5805
	155#	5775	165	5825

Note:

1. The above Frequency and Channel in "*" were 802.11n HT40 and 802.11ac VHT40.
2. The above Frequency and Channel in "#" were 802.11ac VHT80.

2.2 Test Mode

Final test modes are considering the modulation and worse data rates as below table.

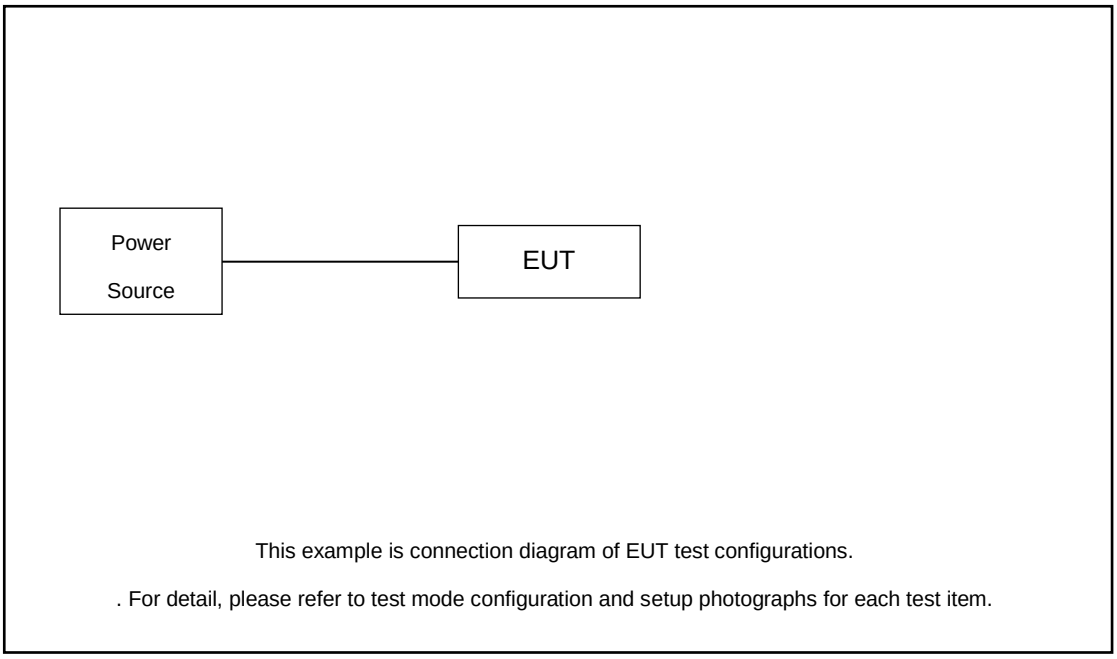
Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ac VHT80	MCS0

AC Conducted Emission	Mode 1 : GSM850 Idle + WLAN(5G)Link + USB Cable(Charging from Adapter) + Battery1

Ch. #		U-NII-3：5745-5825 MHz			
		802.11a	802.11n HT20	802.11n HT40	802.11ac VHT80
L	Low	149	149	151	-
M	Middle	157	157	-	155
H	High	165	165	159	-

2.3 Connection Diagram of Test System

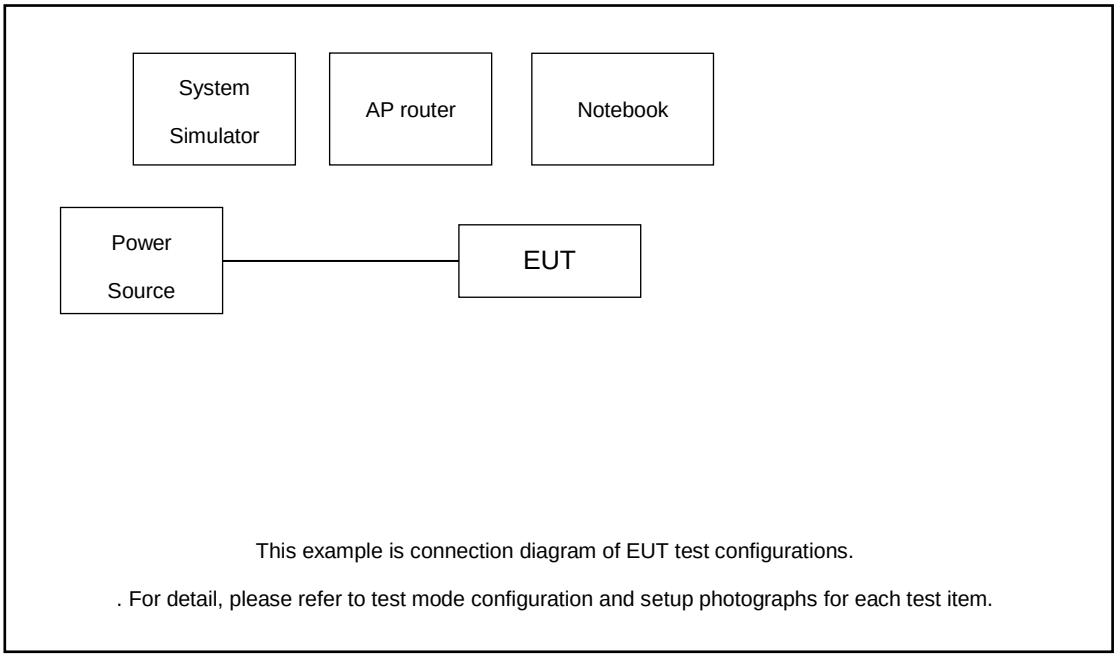
<Radiated Emission >



This example is connection diagram of EUT test configurations.

. For detail, please refer to test mode configuration and setup photographs for each test item.

< AC Conducted Emission >



This example is connection diagram of EUT test configurations.

. For detail, please refer to test mode configuration and setup photographs for each test item.

2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded,1.8m
2.	Notebook	Lenovo	E540	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	WLAN AP	D-Link	DIR-820L	KA2IR820LA1	N/A	Unshielded,1.8m

2.5 EUT Operation Test Setup

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuous transmit.

For AC power line conducted emissions, the EUT was set to connect with the WLAN AP under large package sizes transmission.

2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 2.8 dB and 10dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

=2.8 + 10 = 12.8 (dB)

3 Test Result

3.1 6dB and 26dB and 99% Occupied Bandwidth Measurement

3.1.1 Description of 6dB and 26dB and 99% Occupied Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

26dB and 99% Occupied bandwidth are reporting only.

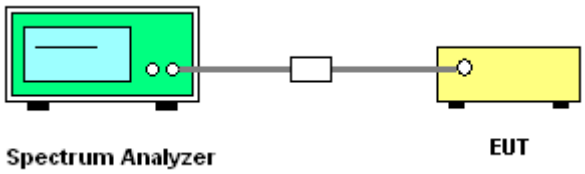
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section C) Emission bandwidth for the band 5.725-5.85GHz
2. For 6dB BW, Set RBW = 100kHz.
   For 26dB BW, Set RBW = approximately 1% of the emission bandwidth.
   For 99% OBW, Set RBW = 1% to 5% of the OBW.
3. For 26dB BW, Set the VBW > RBW.
   For 6dB BW & 99% OBW, Set the VBW ≥ 3 x RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.
7. Measure and record the results in the test report.

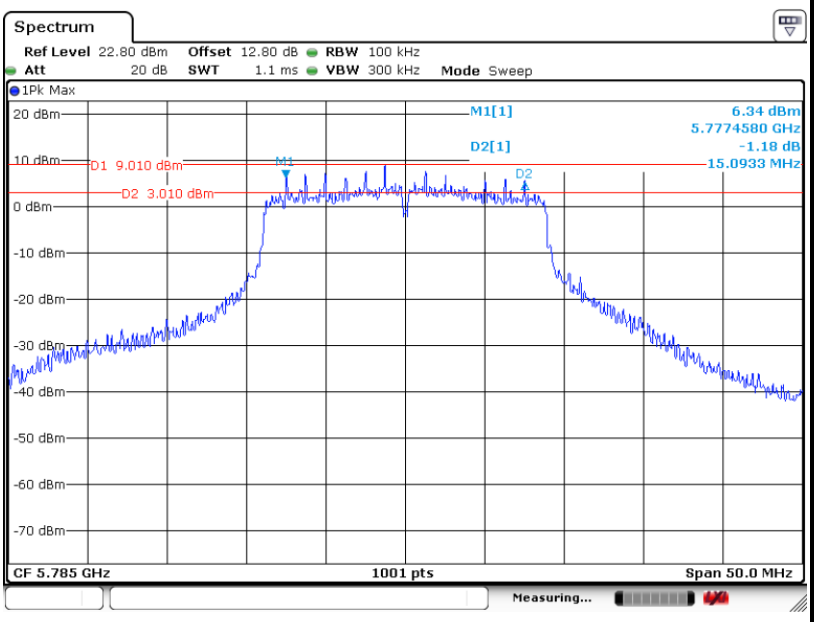
3.1.4 Test Setup



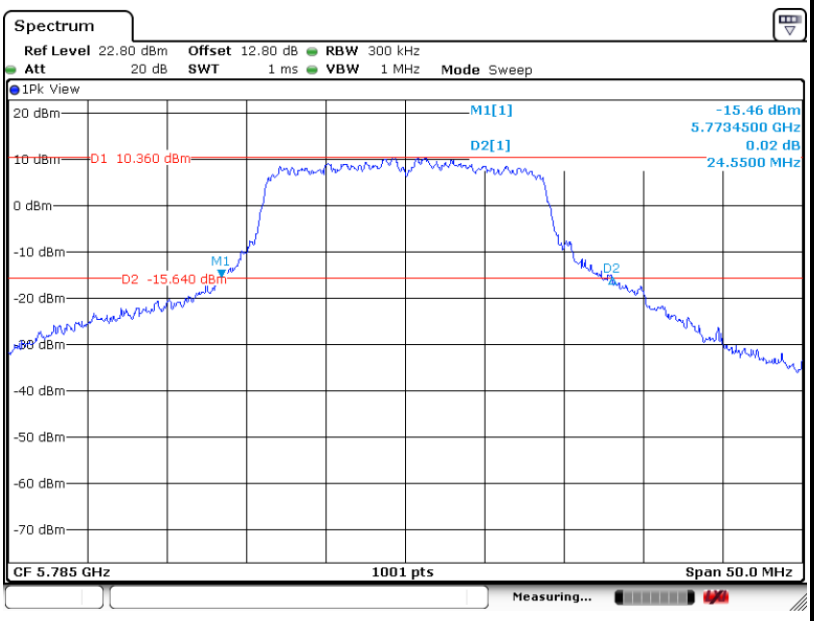
3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.

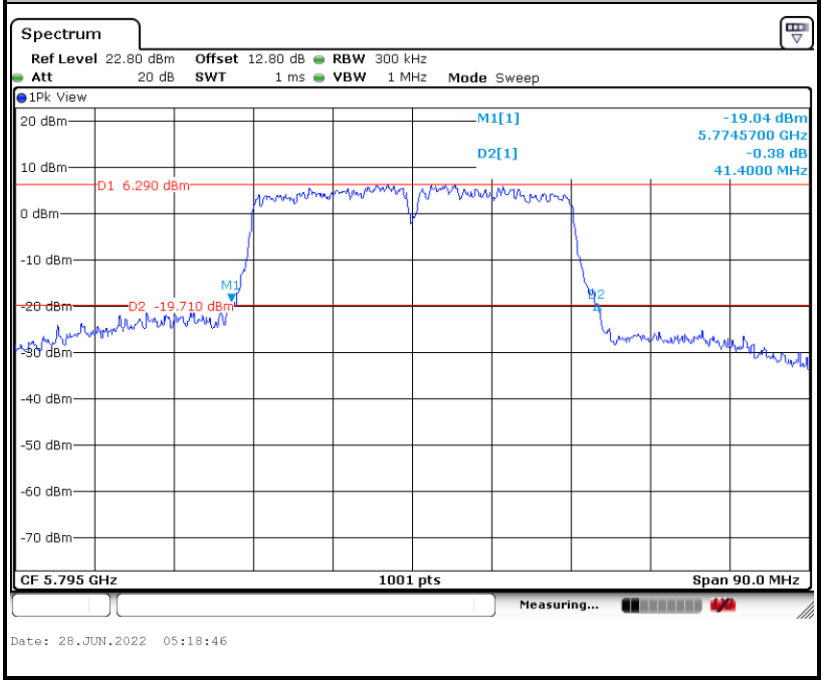
Minimum 6dB Bandwidth



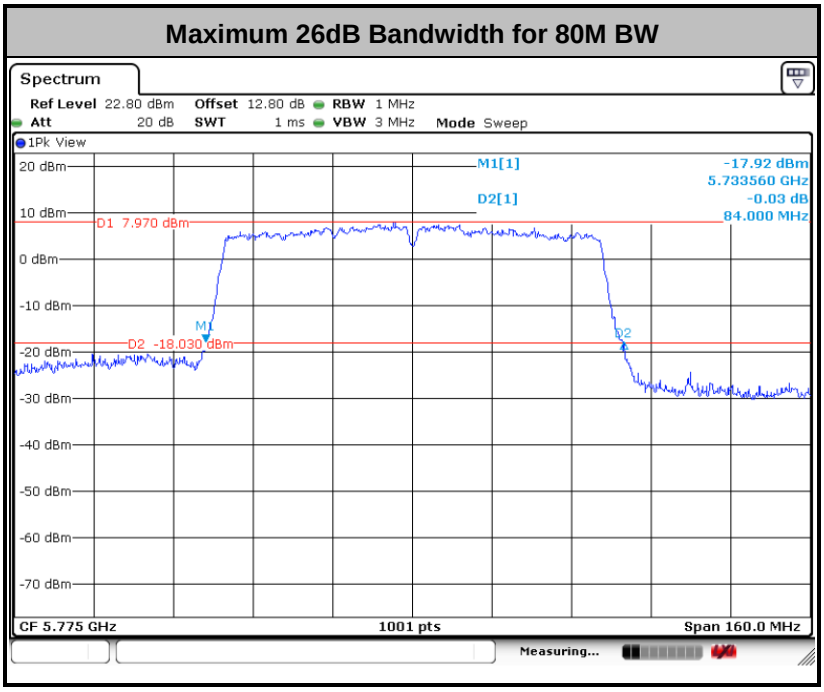
Maximum 26dB Bandwidth for 20M BW



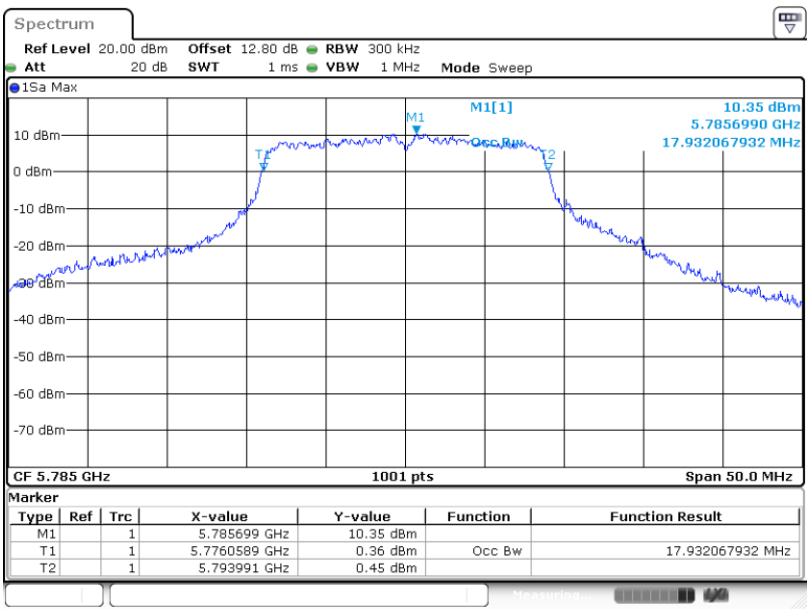
Maximum 26dB Bandwidth for 40M BW



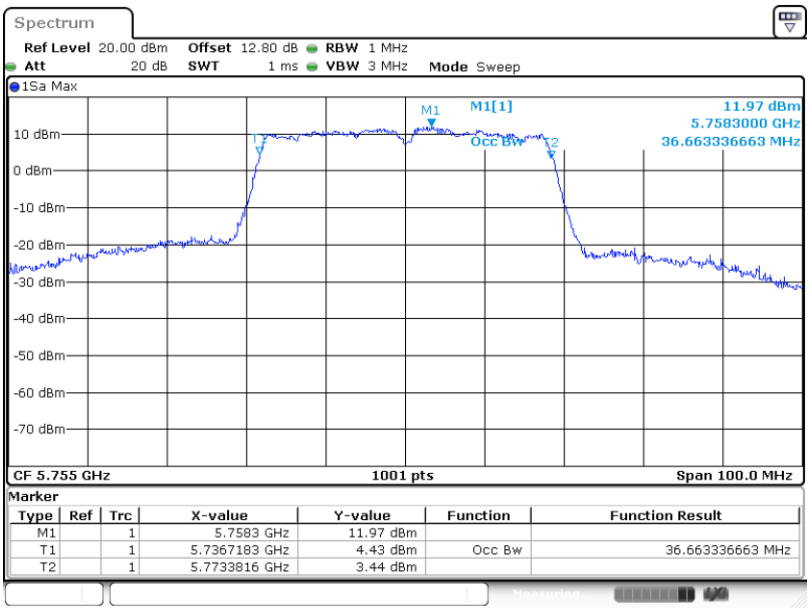
Maximum 26dB Bandwidth for 80M BW



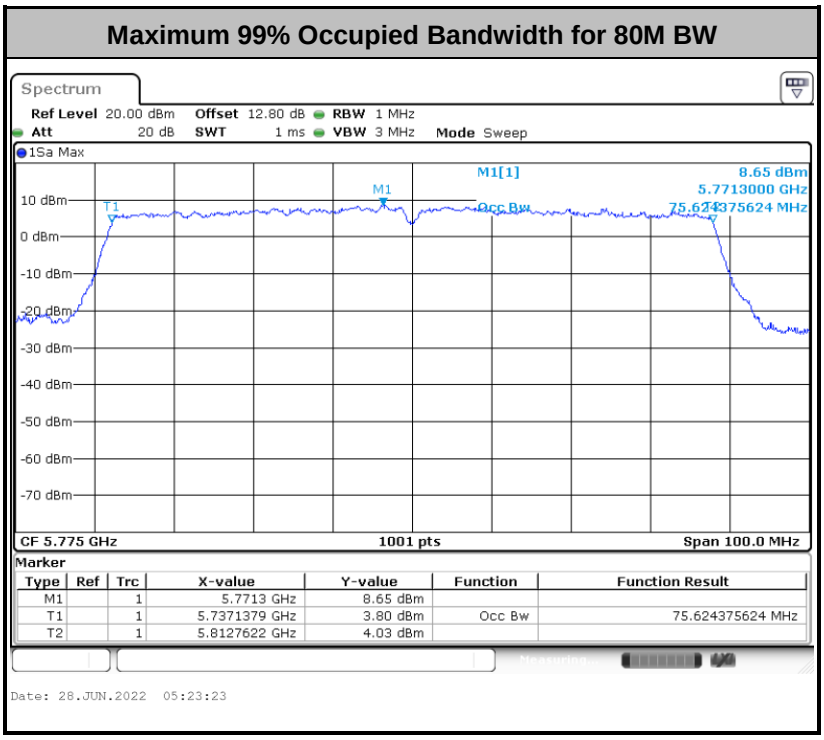
Maximum 99% Occupied Bandwidth for 20M BW



Maximum 99% Occupied Bandwidth for 40M BW



Maximum 99% Occupied Bandwidth for 80M BW



Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

For the band 5.725–5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

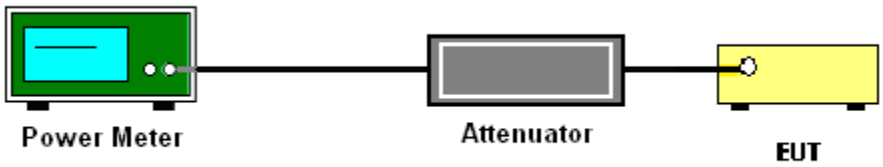
3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, 10 log(1/x), where x is the duty cycle.

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

For the band 5.725–5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section F) Maximum power spectral density.

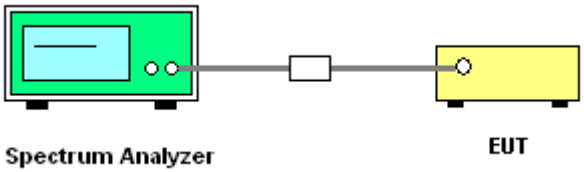
 # Method SA-2 #

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz.
- Set VBW ≥ 1 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add 10 log(500kHz/RBW) to the test result.
- Add 10 log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add 10 log(1/0.25) = 6 dB if the duty cycle is 25 percent.

1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
2. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.

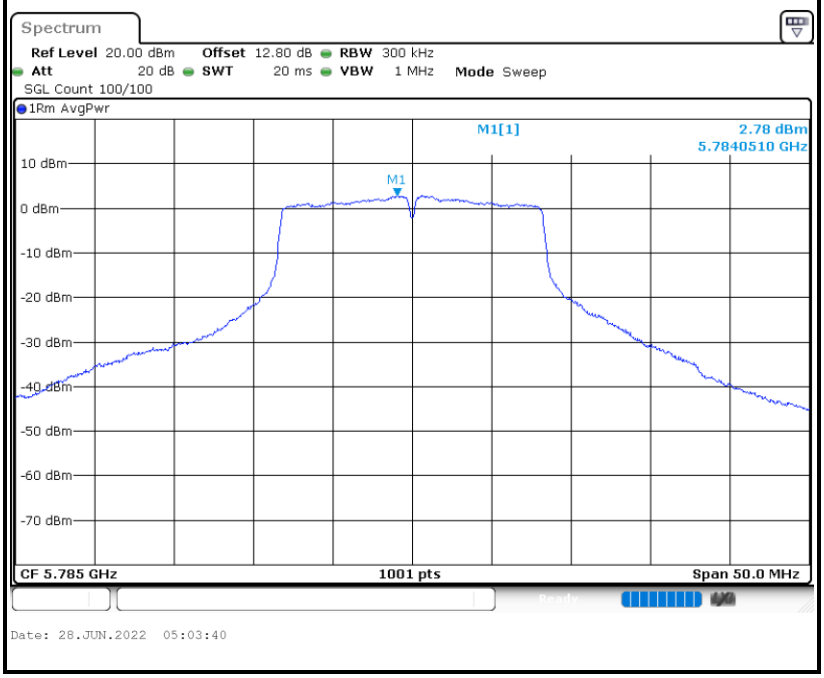
3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

Worst Case Power Density (dBm/300kHz)



3.4 Unwanted Emissions Measurement

This section is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement.

3.4.1 Limit of Unwanted Emissions

(1) For transmitters operating in the 5.725-5.85 GHz band:

15.407(b)(4)(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(2) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table,

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

EIRP (dBm)	Field Strength at 3m (dBμV/m)
- 27	68.3

Note: The following formula is used to convert the EIRP to field strength.

$$EIRP = E_{Meas} + 20\log(d_{Meas}) - 104.7$$

where

EIRP is the equivalent isotropically radiated power, in dBm

E_{Meas} is the field strength of the emission at the measurement distance, in dBμV/m

d_{Meas} is the measurement distance, in m

(3) ANSI C63.10-2013 clause 12.7.3 note 97

As specified by regulatory requirements, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit. However, an out-of-band emission that complies with both the average and peak general regulatory limits is not required to satisfy the peak emission limit.

3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section G) Unwanted emissions measurement.

   (1) Procedure for Unwanted Emissions Measurements Below 1000MHz

   - RBW = 120 kHz
   - VBW = 300 kHz
   - Detector = Peak
   - Trace mode = max hold

   (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

   - RBW = 1 MHz
   - VBW ≥ 3 MHz
   - Detector = Peak
   - Sweep time = auto
   - Trace mode = max hold

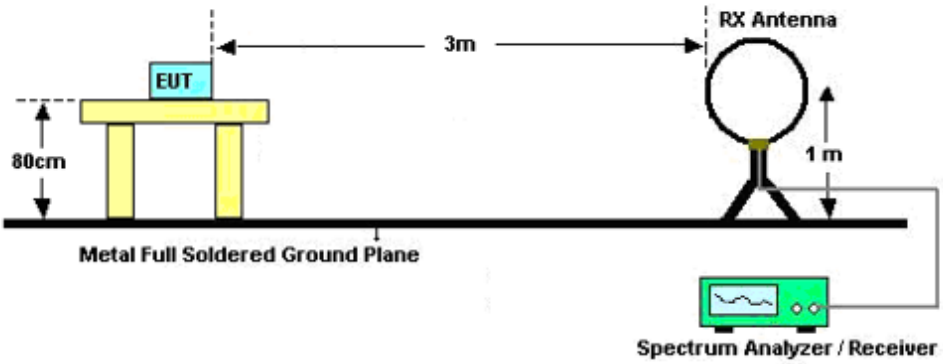
   (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

   - RBW = 1 MHz
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

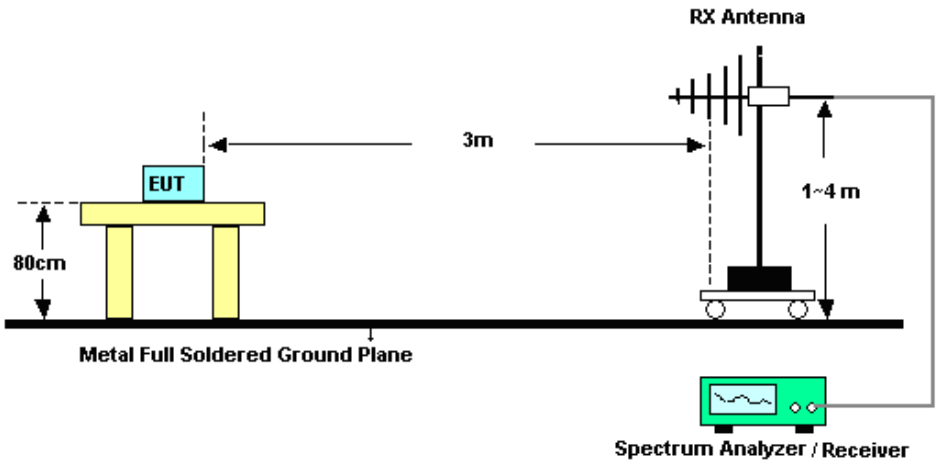
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than peak limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.4.4 Test Setup

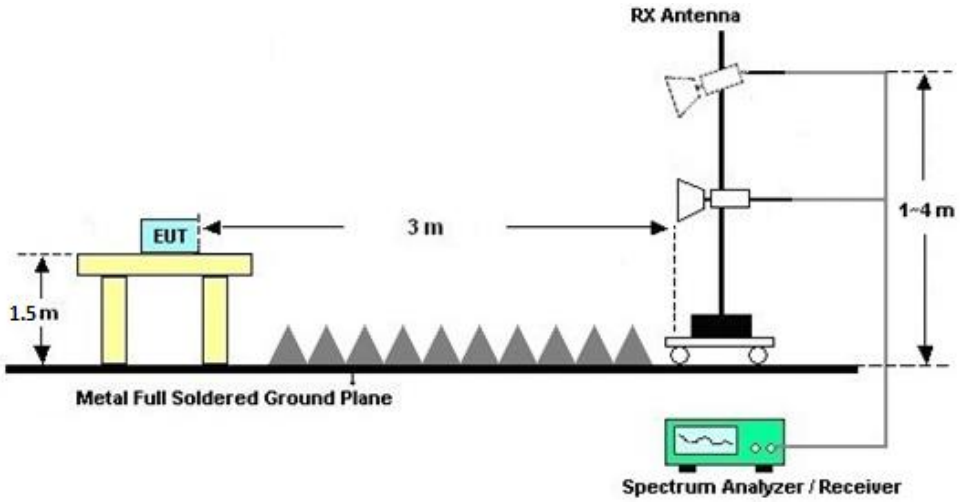
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.4.5 Test Results of Radiated Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

3.4.6 Test Result of Radiated Band Edges

Please refer to Appendix C.

3.4.7 Duty Cycle

Please refer to Appendix D.

3.4.8 Test Result of Unwanted Radiated Emission (30MHz ~ 10th Harmonic or 40GHz, whichever is lower)

Please refer to Appendix C.

3.5 AC Conducted Emission Measurement

3.5.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

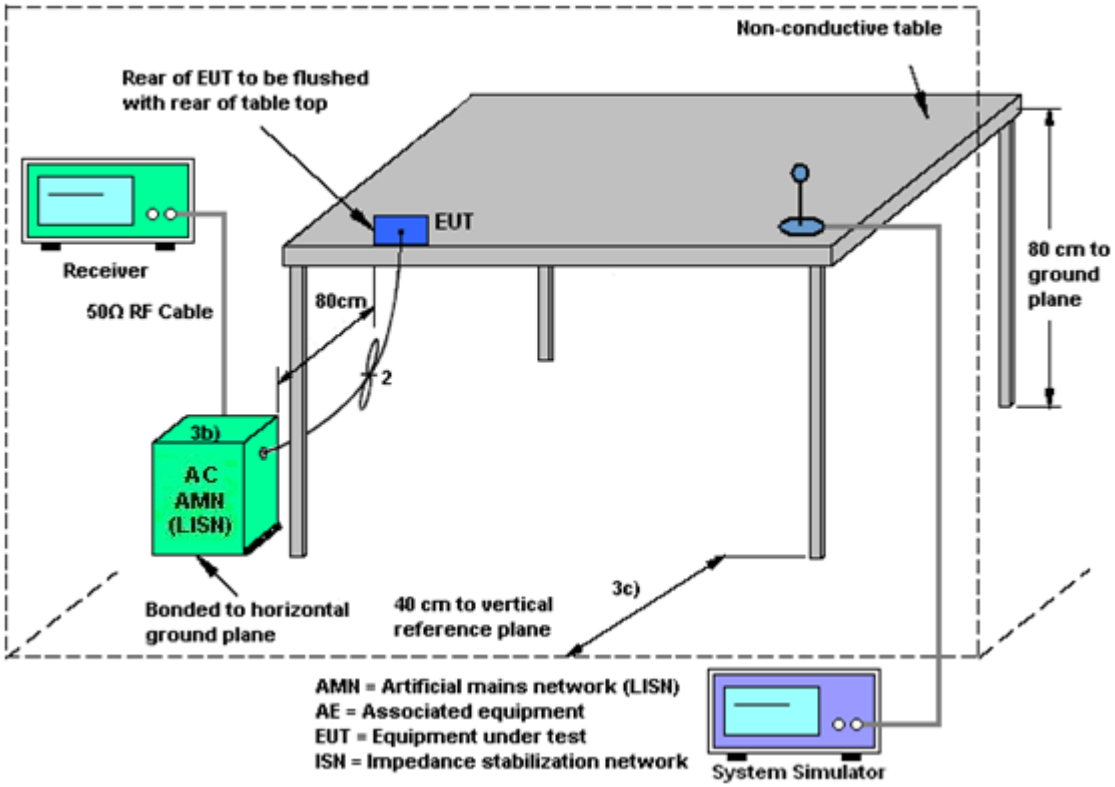
3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.5.4 Test Setup



3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.6 Antenna Requirements

3.6.1 Standard Applicable

If transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.6.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.6.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Apr. 07, 2022	Jun. 28, 2022	Apr. 06, 2023	Conducted (TH01-SZ)
Pulse Power Senor	Anritsu	MA2411B	1339473	30MHz~40GHz	Dec. 28, 2021	Jun. 28, 2022	Dec. 27, 2022	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1542004	50MHz Bandwidth	Dec. 28, 2021	Jun. 28, 2022	Dec. 27, 2022	Conducted (TH01-SZ)
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY54450083	20Hz~8.4GHz	Apr. 06, 2022	Jul. 04, 2022	Apr. 05, 2023	Radiation (03CH03-SZ)
EXA Spectrum Anaiyzer	KEYSIGHT	N9010A	MY55150246	10Hz~44GHz;	Apr. 06, 2022	Jul. 04, 2022	Apr. 05, 2023	Radiation (03CH03-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	Jun. 22, 2022	Jul. 04, 2022	Jun. 21, 2023	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz-2GHz	Jun. 22, 2022	Jul. 04, 2022	Jun. 21, 2023	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00119436	1GHz~18GHz	Jul. 18, 2021	Jul. 04, 2022	Jul. 17, 2022	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Oct. 22, 2021	Jul. 04, 2022	Oct. 21, 2022	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Apr. 10, 2022	Jul. 04, 2022	Apr. 09, 2023	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102211	0.01Hz ~3000MHz	Oct. 22, 2021	Jul. 04, 2022	Oct. 21, 2022	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	AMF-7D-00101800-30-10P-R	1943528	1GHz~18GHz	Oct. 22, 2021	Jul. 04, 2022	Oct. 21, 2022	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY39501302	500MHz~26.5GHz	Dec. 30, 2021	Jul. 04, 2022	Dec. 29, 2022	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	Jul. 04, 2022	NCR	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Jul. 04, 2022	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Jul. 04, 2022	NCR	Radiation (03CH03-SZ)
EMI Receiver	R&S	ESR7	101630	9kHz~7GHz;	Sep. 01, 2021	Jul. 06, 2022	Aug. 31, 2022	Conduction (CO01-SZ)
AC LISN	R&S	ENV216	100063	9kHz~30MHz	Sep. 01, 2021	Jul. 06, 2022	Aug. 31, 2022	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	EMCO	3816/2SH	00103892	9kHz~30MHz	Oct. 29, 2021	Jul. 06, 2022	Oct. 28, 2022	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Jul. 14, 2021	Jul. 06, 2022	Jul. 13, 2022	Conduction (CO01-SZ)

NCR: No Calibration Required

5 Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.10-2013. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of Conducted Measurement

Test Item	Uncertainty
Conducted Power	±1.34 dB
Conducted Emissions	±1.34 dB
Occupied Channel Bandwidth	±0.13 %
Conducted Power Spectral Density	±1.32 dB

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.2dB

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.0dB

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.9dB

Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.0dB

---------- THE END ----------

Appendix A. Conducted Test Results

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Tang ZhaoYang	Temperature:	21~25	°C
Test Date:	2022/6/28	Relative Humidity:	51~54	%

Report Number : FR253001F

TEST RESULTS DATA
6dB and 26dB EBW and 99% OBW

Band IV									
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)	6 dB Bandwidth (MHz)	6dB Bandwidth min. Limit (MHz)	Pass/Fail
11a	6M bps	1	149	5745	16.73	22.80	15.29	0.5	Pass
11a	6Mbps	1	157	5785	16.78	23.55	15.29	0.5	Pass
11a	6Mbps	1	165	5825	16.73	22.90	15.29	0.5	Pass
HT20	MCS 0	1	149	5745	17.88	24.20	15.14	0.5	Pass
HT20	MCS 0	1	157	5785	17.93	24.55	15.09	0.5	Pass
HT20	MCS 0	1	165	5825	17.88	23.35	15.14	0.5	Pass
HT40	MCS 0	1	151	5755	36.66	41.04	35.26	0.5	Pass
HT40	MCS 0	1	159	5795	36.66	41.40	35.07	0.5	Pass
VHT80	MCS 0	1	155	5775	75.62	84.00	75.20	0.5	Pass

Report Number : FR253001F

TEST RESULTS DATA
Average Power Table

Band IV										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)		Pass/Fail
11a	6M bps	1	149	5745	0.08	18.34	30.00	-6.00		Pass
11a	6Mbps	1	157	5785	0.08	18.82	30.00	-6.00		Pass
11a	6Mbps	1	165	5825	0.08	18.46	30.00	-6.00		Pass
HT20	MCS 0	1	149	5745	0.09	18.21	30.00	-6.00		Pass
HT20	MCS 0	1	157	5785	0.09	18.73	30.00	-6.00		Pass
HT20	MCS 0	1	165	5825	0.09	18.30	30.00	-6.00		Pass
HT40	MCS 0	1	151	5755	0.16	17.73	30.00	-6.00		Pass
HT40	MCS 0	1	159	5795	0.16	18.06	30.00	-6.00		Pass
VHT20	MCS 0	1	149	5745	0.08	17.42	30.00	-6.00		Pass
VHT20	MCS 0	1	157	5785	0.08	18.07	30.00	-6.00		Pass
VHT20	MCS 0	1	165	5825	0.08	17.56	30.00	-6.00		Pass
VHT40	MCS 0	1	151	5755	0.16	16.96	30.00	-6.00		Pass
VHT40	MCS 0	1	159	5795	0.16	17.31	30.00	-6.00		Pass
VHT80	MCS 0	1	155	5775	0.32	16.83	30.00	-6.00		Pass

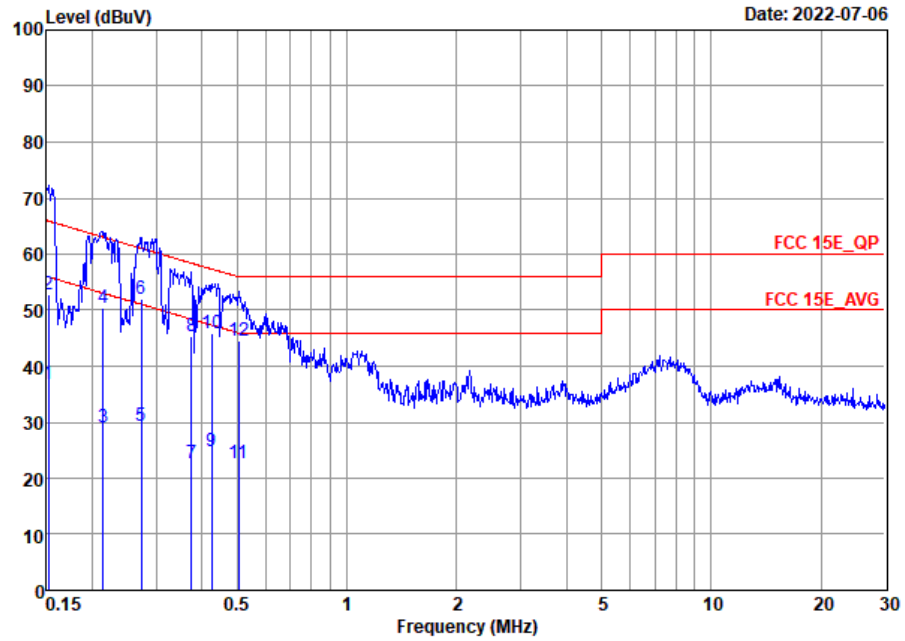
Report Number : FR253001F

TEST RESULTS DATA
Power Spectral Density

Band IV										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	10log (500kHz /RBW) Factor (dB)	Average Power Density (dBm/500kHz)	Average PSD Limit (dBm/500kHz)	DG (dBi)	Pass/Fail
11a	6M bps	1	149	5745	0.08	2.22	4.68	30.00	-6.00	Pass
11a	6Mbps	1	157	5785	0.08	2.22	5.08	30.00	-6.00	Pass
11a	6Mbps	1	165	5825	0.08	2.22	4.84	30.00	-6.00	Pass
HT20	MCS 0	1	149	5745	0.09	2.22	4.07	30.00	-6.00	Pass
HT20	MCS 0	1	157	5785	0.09	2.22	4.61	30.00	-6.00	Pass
HT20	MCS 0	1	165	5825	0.09	2.22	4.36	30.00	-6.00	Pass
HT40	MCS 0	1	151	5755	0.16	2.22	0.41	30.00	-6.00	Pass
HT40	MCS 0	1	159	5795	0.16	2.22	0.96	30.00	-6.00	Pass
VHT80	MCS 0	1	155	5775	0.32	2.22	-2.94	30.00	-6.00	Pass

Appendix B. AC Conducted Emission Test Results

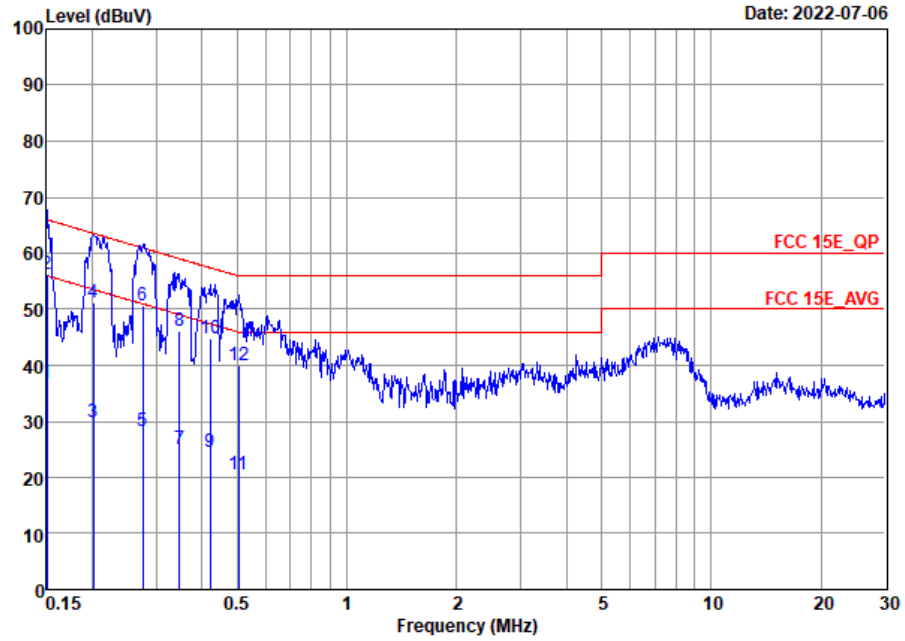
Test Engineer :	Lily Wang	**Temperature :**	22~25℃
		Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-SZ
Condition: FCC 15E_QP LISN_20210901_L LINE

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.15	36.73	-19.18	55.91	15.70	10.20	10.83	Average
2		0.15	52.83	-13.08	65.91	31.80	10.20	10.83	QP
3		0.21	29.18	-23.87	53.05	8.70	10.19	10.29	Average
4		0.21	50.28	-12.77	63.05	29.80	10.19	10.29	QP
5		0.27	29.31	-21.72	51.03	8.40	10.17	10.74	Average
6	*	0.27	51.91	-9.12	61.03	31.00	10.17	10.74	QP
7		0.38	22.62	-25.77	48.39	1.20	10.09	11.33	Average
8		0.38	45.32	-13.07	58.39	23.90	10.09	11.33	QP
9		0.43	24.88	-22.45	47.33	3.20	10.11	11.57	Average
10		0.43	45.88	-11.45	57.33	24.20	10.11	11.57	QP
11		0.50	22.56	-23.44	46.00	0.60	10.12	11.84	Average
12		0.50	44.46	-11.54	56.00	22.50	10.12	11.84	QP

Test Engineer :	Lily Wang	**Temperature :**	22~25℃
		Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-SZ
Condition: FCC 15E QP LISN 20210901 N NEUTRAL

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.15	36.76	-19.24	56.00	15.60	10.31	10.85	Average
2	*	0.15	56.16	-9.84	66.00	35.00	10.31	10.85	QP
3		0.20	29.84	-23.70	53.54	9.39	10.28	10.17	Average
4		0.20	51.14	-12.40	63.54	30.69	10.28	10.17	QP
5		0.28	28.18	-22.76	50.94	7.19	10.23	10.76	Average
6		0.28	50.68	-10.26	60.94	29.69	10.23	10.76	QP
7		0.35	25.05	-24.00	49.05	3.70	10.17	11.18	Average
8		0.35	46.15	-12.90	59.05	24.80	10.17	11.18	QP
9		0.42	24.53	-22.89	47.42	2.80	10.19	11.54	Average
10		0.42	44.93	-12.49	57.42	23.20	10.19	11.54	QP
11		0.50	20.63	-25.37	46.00	-1.40	10.19	11.84	Average
12		0.50	40.13	-15.87	56.00	18.10	10.19	11.84	QP

Note:

1. Level(dBμV) = Read Level(dBμV) + LISN Factor(dB) + Cable Loss(dB)
2. Over Limit(dB) = Level(dBμV) – Limit Line(dBμV)

Appendix C. Radiated Spurious Emission

5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Margin	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 149 5745MHz		5634.6	49.13	-19.17	68.3	39.78	34.57	8.16	33.38	210	339	P	H
		5699.8	52.16	-52.89	105.05	42.3	34.7	8.52	33.36	210	339	P	H
		5712.2	59.32	-49.3	108.62	49.48	34.7	8.5	33.36	210	339	P	H
		5724.4	66.29	-54.54	120.83	56.47	34.7	8.47	33.35	210	339	P	H
	*	5745	103.31	-	-	93.53	34.7	8.43	33.35	210	339	P	H
		5745	95.65	-	-	85.87	34.7	8.43	33.35	210	339	A	H
		5607	49.33	-18.97	68.3	40.19	34.51	8.01	33.38	188	36	P	V
		5691	49.91	-48.67	98.58	40.12	34.68	8.47	33.36	188	36	P	V
		5720	59.29	-51.51	110.8	49.46	34.7	8.48	33.35	188	36	P	V
		5725	66.23	-55.97	122.2	56.41	34.7	8.47	33.35	188	36	P	V
	*	5745	101.98	-	-	92.2	34.7	8.43	33.35	188	36	P	V
		5745	94.14	-	-	84.36	34.7	8.43	33.35	188	36	A	V
802.11a CH 157 5785MHz		5623.2	49.54	-18.76	68.3	40.27	34.55	8.1	33.38	208	340	P	H
		5673.8	49.31	-36.59	85.9	39.65	34.65	8.38	33.37	208	340	P	H
		5701.2	49.88	-55.66	105.54	40.02	34.7	8.52	33.36	208	340	P	H
		5723.8	49.65	-69.81	119.46	39.83	34.7	8.47	33.35	208	340	P	H
	*	5785	103.35	-	-	93.58	34.77	8.35	33.35	208	340	P	H
		5785	95.67	-	-	85.9	34.77	8.35	33.35	208	340	A	H
		5853.8	50.9	-62.64	113.54	40.9	34.91	8.42	33.33	208	340	P	H
		5867.8	50.23	-56.98	107.21	40.18	34.94	8.44	33.33	208	340	P	H
		5893	49.62	-42.22	91.84	39.47	34.99	8.49	33.33	208	340	P	H
		5948	49.44	-18.86	68.3	39.11	35.1	8.54	33.31	208	340	P	H
		5616.2	48.93	-19.37	68.3	39.72	34.53	8.06	33.38	258	127	P	V
		5657.4	49.39	-24.39	73.78	39.86	34.61	8.29	33.37	258	127	P	V
		5711.2	49.36	-58.98	108.34	39.52	34.7	8.5	33.36	258	127	P	V
		5723.2	48.8	-69.3	118.1	38.98	34.7	8.47	33.35	258	127	P	V
	*	5785	103.1	-	-	93.33	34.77	8.35	33.35	258	127	P	V

		5785	95.51	-	-	85.74	34.77	8.35	33.35	258	127	A	V
		5852.4	49.8	-66.93	116.73	39.82	34.9	8.41	33.33	258	127	P	V
		5871	49.83	-56.49	106.32	39.77	34.94	8.45	33.33	258	127	P	V
		5882.2	50.26	-49.59	99.85	40.16	34.96	8.47	33.33	258	127	P	V
		5934.2	49.65	-18.65	68.3	39.36	35.07	8.53	33.31	258	127	P	V
802.11a CH 165 5825MHz	*	5825	102.93	-	-	93.05	34.85	8.36	33.33	100	341	P	H
		5825	95.43	-	-	85.55	34.85	8.36	33.33	100	341	A	H
		5852.4	57.99	-58.74	116.73	48.01	34.9	8.41	33.33	100	341	P	H
		5860.2	57.11	-52.23	109.34	47.09	34.92	8.43	33.33	100	341	P	H
		5886.2	51.86	-45.02	96.88	41.74	34.97	8.48	33.33	100	341	P	H
		5934.2	49.6	-18.7	68.3	39.31	35.07	8.53	33.31	100	341	P	H
	*	5825	103.92	-	-	94.04	34.85	8.36	33.33	303	132	P	V
		5825	96.52	-	-	86.64	34.85	8.36	33.33	303	132	A	V
		5851	57.36	-62.56	119.92	47.38	34.9	8.41	33.33	303	132	P	V
		5855.2	57.3	-53.44	110.74	47.3	34.91	8.42	33.33	303	132	P	V
		5881	51.77	-48.97	100.74	41.67	34.96	8.47	33.33	303	132	P	V
		5946	49.69	-18.61	68.3	39.37	35.09	8.54	33.31	303	132	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

5725~5850MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 149 5745MHz		11490	46.54	-27.46	74	50.42	38.29	11.54	53.71	-	-	P	H
		17235	51.39	-16.91	68.3	47.06	41.79	14.91	52.37	-	-	P	H
		11490	46.5	-27.5	74	50.38	38.29	11.54	53.71	-	-	P	V
		17235	52.68	-15.62	68.3	48.35	41.79	14.91	52.37	-	-	P	V
802.11a CH 157 5785MHz		11570	47.73	-26.27	74	51.43	38.34	11.61	53.65	-	-	P	H
		17355	50.67	-17.63	68.3	46.38	41.64	15.1	52.45	-	-	P	H
		11570	47.28	-26.72	74	50.98	38.34	11.61	53.65	-	-	P	V
		17355	50.79	-17.51	68.3	46.5	41.64	15.1	52.45	-	-	P	V
802.11a CH 165 5825MHz		11650	47.89	-26.11	74	51.44	38.39	11.67	53.61	-	-	P	H
		17475	51.1	-17.2	68.3	46.86	41.48	15.29	52.53	-	-	P	H
		11650	47.86	-26.14	74	51.41	38.39	11.67	53.61	-	-	P	V
		17475	50.46	-17.84	68.3	46.22	41.48	15.29	52.53	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

5725~5850MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5645.4	50.06	-18.24	68.3	40.62	34.59	8.22	33.37	211	339	P	H
		5700	53.26	-51.94	105.2	43.4	34.7	8.52	33.36	211	339	P	H
		5716.6	60.68	-49.17	109.85	50.84	34.7	8.49	33.35	211	339	P	H
		5724.2	65.07	-55.31	120.38	55.25	34.7	8.47	33.35	211	339	P	H
802.11n	*	5745	102.46	-	-	92.68	34.7	8.43	33.35	211	339	P	H
HT20		5745	95.11	-	-	85.33	34.7	8.43	33.35	211	339	A	H
CH 149		5603.6	50.31	-17.99	68.3	41.19	34.51	7.99	33.38	188	39	P	V
5745MHz		5698.4	51.55	-52.47	104.02	41.7	34.7	8.51	33.36	188	39	P	V
		5713.4	60.46	-48.49	108.95	50.62	34.7	8.49	33.35	188	39	P	V
		5724.2	66.7	-53.68	120.38	56.88	34.7	8.47	33.35	188	39	P	V
	*	5745	101.48	-	-	91.7	34.7	8.43	33.35	188	39	P	V
		5745	94.23	-	-	84.45	34.7	8.43	33.35	188	39	A	V
		5627	49.29	-19.01	68.3	40	34.55	8.12	33.38	239	128	P	H
		5691	49.19	-49.39	98.58	39.4	34.68	8.47	33.36	239	128	P	H
		5718.8	51.17	-59.29	110.46	41.34	34.7	8.48	33.35	239	128	P	H
		5720.2	50.52	-60.74	111.26	40.69	34.7	8.48	33.35	239	128	P	H
	*	5785	103.28	-	-	93.51	34.77	8.35	33.35	239	128	P	H
		5785	95.89	-	-	86.12	34.77	8.35	33.35	239	128	A	H
		5852.4	55.35	-61.38	116.73	45.37	34.9	8.41	33.33	239	128	P	H
802.11n		5858.4	52.84	-57.01	109.85	42.82	34.92	8.43	33.33	239	128	P	H
HT20		5879.2	50.13	-51.95	102.08	40.04	34.96	8.46	33.33	239	128	P	H
CH 157		5939.2	49.84	-18.46	68.3	39.54	35.08	8.53	33.31	239	128	P	H
5785MHz		5602.2	49.66	-18.64	68.3	40.56	34.5	7.98	33.38	183	39	P	V
		5689.8	49.84	-47.86	97.7	40.06	34.68	8.46	33.36	183	39	P	V
		5715.2	50.01	-59.45	109.46	40.17	34.7	8.49	33.35	183	39	P	V
		5724	49.35	-70.57	119.92	39.53	34.7	8.47	33.35	183	39	P	V
	*	5785	101.87	-	-	92.1	34.77	8.35	33.35	183	39	P	V
		5785	94.15	-	-	84.38	34.77	8.35	33.35	183	39	A	V
		5850.8	48.59	-71.79	120.38	38.61	34.9	8.41	33.33	183	39	P	V
		5868.8	50.38	-56.55	106.93	40.33	34.94	8.44	33.33	183	39	P	V

		5919.2	50.03	-22.45	72.48	39.79	35.04	8.52	33.32	183	39	P	V
		5927.4	49.75	-18.55	68.3	39.49	35.05	8.52	33.31	183	39	P	V
802.11n HT20 CH 165 5825MHz	*	5825	104.32	-	-	94.44	34.85	8.36	33.33	234	130	P	H
		5825	96.85	-	-	86.97	34.85	8.36	33.33	234	130	A	H
		5853.8	60.53	-53.01	113.54	50.53	34.91	8.42	33.33	234	130	P	H
		5871.2	56.01	-50.25	106.26	45.95	34.94	8.45	33.33	234	130	P	H
		5882.2	55.51	-44.34	99.85	45.41	34.96	8.47	33.33	234	130	P	H
		5943.4	50.28	-18.02	68.3	39.97	35.09	8.53	33.31	234	130	P	H
	*	5825	104.38	-	-	94.5	34.85	8.36	33.33	366	120	P	V
		5825	95.99	-	-	86.11	34.85	8.36	33.33	366	120	A	V
		5850.4	61.88	-59.41	121.29	51.9	34.9	8.41	33.33	366	120	P	V
		5856	59.56	-50.96	110.52	49.56	34.91	8.42	33.33	366	120	P	V
		5887.6	52.12	-43.73	95.85	41.99	34.98	8.48	33.33	366	120	P	V
		5935.6	49.76	-18.54	68.3	39.47	35.07	8.53	33.31	366	120	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

5725~5850MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n		11490	46.42	-27.58	74	50.3	38.29	11.54	53.71	-	-	P	H
HT20		17235	51.43	-16.87	68.3	47.1	41.79	14.91	52.37	-	-	P	H
CH 149		11490	46.63	-27.37	74	50.51	38.29	11.54	53.71	-	-	P	V
5745MHz		17235	51.89	-16.41	68.3	47.56	41.79	14.91	52.37	-	-	P	V
802.11n		11570	47.06	-26.94	74	50.76	38.34	11.61	53.65	-	-	P	H
HT20		17355	50.47	-17.83	68.3	46.18	41.64	15.1	52.45	-	-	P	H
CH 157		11570	46.44	-27.56	74	50.14	38.34	11.61	53.65	-	-	P	V
5785MHz		17355	50.51	-17.79	68.3	46.22	41.64	15.1	52.45	-	-	P	V
802.11n		11650	47.55	-26.45	74	51.1	38.39	11.67	53.61	-	-	P	H
HT20		17475	50.76	-17.54	68.3	46.52	41.48	15.29	52.53	-	-	P	H
CH 165		11650	47.71	-26.29	74	51.26	38.39	11.67	53.61	-	-	P	V
5825MHz		17475	50.96	-17.34	68.3	46.72	41.48	15.29	52.53	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

5725~5850MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5647.6	51.33	-16.97	68.3	41.87	34.6	8.23	33.37	224	63	P	H
		5699.2	57.29	-47.32	104.61	47.43	34.7	8.52	33.36	224	63	P	H
		5718.4	69.44	-40.91	110.35	59.61	34.7	8.48	33.35	224	63	P	H
		5724.2	70.59	-49.79	120.38	60.77	34.7	8.47	33.35	224	63	P	H
	*	5755	100.18	-	-	90.41	34.71	8.41	33.35	224	63	P	H
		5755	92.46	-	-	82.69	34.71	8.41	33.35	224	63	A	H
		5850.2	49.87	-71.87	121.74	39.89	34.9	8.41	33.33	224	63	P	H
		5870.2	49.88	-56.66	106.54	39.82	34.94	8.45	33.33	224	63	P	H
802.11n		5878.4	49.62	-53.05	102.67	39.53	34.96	8.46	33.33	224	63	P	H
HT40		5928.8	49.4	-18.9	68.3	39.13	35.06	8.52	33.31	224	63	P	H
CH 151		5628.8	49.73	-18.57	68.3	40.42	34.56	8.13	33.38	396	120	P	V
5755MHz		5695	55.43	-46.09	101.52	45.61	34.69	8.49	33.36	396	120	P	V
		5713	68.63	-40.21	108.84	58.8	34.7	8.49	33.36	396	120	P	V
		5723.8	68.91	-50.55	119.46	59.09	34.7	8.47	33.35	396	120	P	V
	*	5755	99.76	-	-	89.99	34.71	8.41	33.35	396	120	P	V
		5755	92.41	-	-	82.64	34.71	8.41	33.35	396	120	A	V
		5850	50.87	-71.33	122.2	40.89	34.9	8.41	33.33	396	120	P	V
		5872.2	50.3	-55.68	105.98	40.24	34.94	8.45	33.33	396	120	P	V
		5903	50.11	-34.33	84.44	39.92	35.01	8.5	33.32	396	120	P	V
		5945	49.99	-18.31	68.3	39.67	35.09	8.54	33.31	396	120	P	V

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 159 5795MHz		5606.6	49.79	-18.51	68.3	40.65	34.51	8.01	33.38	237	132	P	H
		5697.2	49.75	-53.39	103.14	39.92	34.69	8.5	33.36	237	132	P	H
		5720	54.61	-56.19	110.8	44.78	34.7	8.48	33.35	237	132	P	H
		5723	55.58	-62.06	117.64	45.76	34.7	8.47	33.35	237	132	P	H
	*	5795	100.74	-	-	90.96	34.79	8.33	33.34	237	132	P	H
		5795	92.66	-	-	82.88	34.79	8.33	33.34	237	132	A	H
		5852	56.95	-60.69	117.64	46.97	34.9	8.41	33.33	237	132	P	H
		5855.6	55.78	-54.85	110.63	45.78	34.91	8.42	33.33	237	132	P	H
		5875.2	51.59	-53.46	105.05	41.51	34.95	8.46	33.33	237	132	P	H
		5927	50.47	-17.83	68.3	40.21	35.05	8.52	33.31	237	132	P	H
		5604.4	49.39	-18.91	68.3	40.27	34.51	7.99	33.38	388	122	P	V
		5674.8	49.87	-36.77	86.64	40.21	34.65	8.38	33.37	388	122	P	V
		5719.2	55.42	-55.16	110.58	45.59	34.7	8.48	33.35	388	122	P	V
		5723.6	54.75	-64.26	119.01	44.93	34.7	8.47	33.35	388	122	P	V
	*	5795	100.64	-	-	90.86	34.79	8.33	33.34	388	122	P	V
		5795	92.42	-	-	82.64	34.79	8.33	33.34	388	122	A	V
		5852	56.29	-61.35	117.64	46.31	34.9	8.41	33.33	388	122	P	V
		5855.6	55.75	-54.88	110.63	45.75	34.91	8.42	33.33	388	122	P	V
		5882.8	52.84	-46.57	99.41	42.73	34.97	8.47	33.33	388	122	P	V
		5944.8	50.38	-17.92	68.3	40.06	35.09	8.54	33.31	388	122	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

5725~5850MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n		11510	46.81	-27.19	74	50.63	38.31	11.56	53.69	-	-	P	H
HT40		17265	50.85	-17.45	68.3	46.53	41.76	14.95	52.39	-	-	P	H
CH 151		11510	47.2	-26.8	74	51.02	38.31	11.56	53.69	-	-	P	V
5755MHz		17265	50.15	-18.15	68.3	45.83	41.76	14.95	52.39	-	-	P	V
802.11n		11590	46.74	-27.26	74	50.41	38.35	11.62	53.64	-	-	P	H
HT40		17385	51.55	-16.75	68.3	47.27	41.6	15.15	52.47	-	-	P	H
CH 159		11590	46.55	-27.45	74	50.22	38.35	11.62	53.64	-	-	P	V
5795MHz		17385	51.18	-17.12	68.3	46.9	41.6	15.15	52.47	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

5725~5850MHz

WIFI 802.11ac VHT80 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80 CH 155 5775MHz		5617	50.04	-18.26	68.3	40.83	34.53	8.06	33.38	261	134	P	H
		5696.4	66.32	-36.23	102.55	56.49	34.69	8.5	33.36	261	134	P	H
		5715.8	67.55	-42.08	109.63	57.71	34.7	8.49	33.35	261	134	P	H
		5722	67.38	-47.98	115.36	57.55	34.7	8.48	33.35	261	134	P	H
	*	5775	96.95	-	-	87.18	34.75	8.37	33.35	261	134	P	H
		5775	89.64	-	-	79.87	34.75	8.37	33.35	261	134	A	H
		5851.8	61.99	-56.11	118.1	52.01	34.9	8.41	33.33	261	134	P	H
		5869.4	62	-44.77	106.77	51.95	34.94	8.44	33.33	261	134	P	H
		5875	58.32	-46.88	105.2	48.25	34.95	8.45	33.33	261	134	P	H
		5940.4	49.97	-18.33	68.3	39.67	35.08	8.53	33.31	261	134	P	H
		5645.4	49.92	-18.38	68.3	40.48	34.59	8.22	33.37	390	118	P	V
		5696	66.54	-35.72	102.26	56.71	34.69	8.5	33.36	390	118	P	V
		5718.6	67.78	-42.63	110.41	57.95	34.7	8.48	33.35	390	118	P	V
		5723	67.6	-50.04	117.64	57.78	34.7	8.47	33.35	390	118	P	V
	*	5775	96.79	-	-	87.02	34.75	8.37	33.35	390	118	P	V
		5775	89.03	-	-	79.26	34.75	8.37	33.35	390	118	A	V
		5851.2	60.72	-58.74	119.46	50.74	34.9	8.41	33.33	390	118	P	V
		5867.2	60.76	-46.62	107.38	50.72	34.93	8.44	33.33	390	118	P	V
		5877.4	56.6	-46.82	103.42	46.52	34.95	8.46	33.33	390	118	P	V
		5945.8	50.58	-17.72	68.3	40.26	35.09	8.54	33.31	390	118	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

5725~5850MHz

WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac		11550	47.87	-26.13	74	51.61	38.33	11.59	53.66	-	-	P	H
VHT80		17325	51.45	-16.85	68.3	47.15	41.68	15.05	52.43	-	-	P	H
CH 155		11550	46.54	-27.46	74	50.28	38.33	11.59	53.66	-	-	P	V
5775MHz		17325	51.55	-16.75	68.3	47.25	41.68	15.05	52.43	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

WIFI 802.11n HT20 (LF @ 3m)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 LF		51.34	19.39	-20.61	40	31.92	20.25	2.21	34.99	-	-	P	H
		98.87	21.62	-21.88	43.5	39.35	14.6	2.47	34.8	-	-	P	H
		164.83	22.31	-21.19	43.5	35.1	19.3	2.61	34.7	-	-	P	H
		180.35	21.47	-22.03	43.5	35.56	17.94	2.67	34.7	-	-	P	H
		285.11	21.3	-24.7	46	33.36	19.48	3.09	34.63	-	-	P	H
		595.51	26.46	-19.54	46	31.48	25.7	3.87	34.59	-	-	P	H
		65.89	25.14	-14.86	40	38.97	18.64	2.37	34.84	-	-	P	V
		94.99	27.86	-15.64	43.5	46.17	14	2.49	34.8	-	-	P	V
		165.8	26.85	-16.65	43.5	39.67	19.27	2.61	34.7	-	-	P	V
		179.38	27.19	-16.31	43.5	41.16	18.06	2.67	34.7	-	-	P	V
		311.3	22.62	-23.38	46	34.03	19.99	3.2	34.6	-	-	P	V
		664.38	27.05	-18.95	46	31.11	26.48	3.93	34.47	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

Note symbol

*	**Fundamental Frequency** which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is **Margin** line.
P/A	**P**eak or **A**verage
H/V	**H**orizontal or **V**ertical

A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
3. Margin (dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Margin (dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Margin (dB) = Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

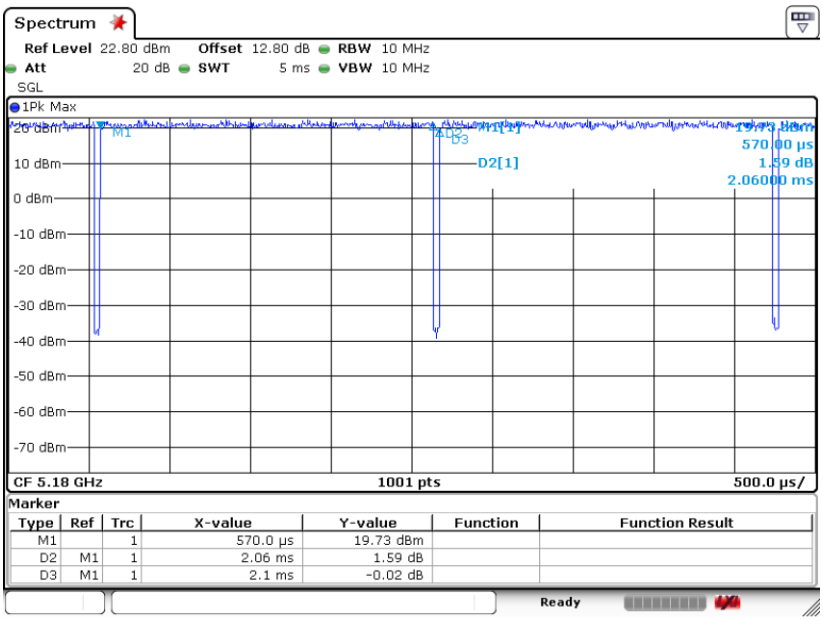
= -10.46(dB)

Both peak and average measured complies with the limit line, so test result is "PASS".

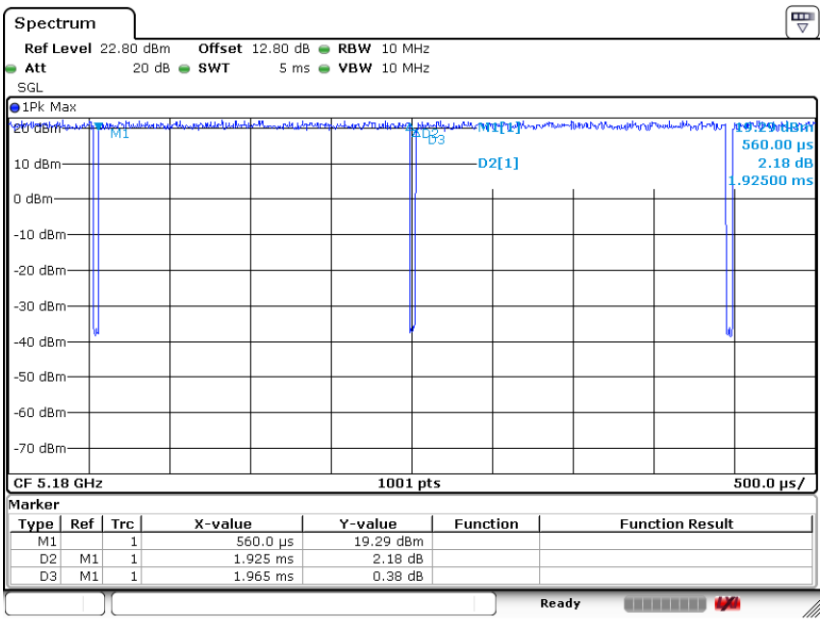
Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11a	98.10	-	-	10Hz
802.11n HT20	97.96	1.925	0.519	1KHz
802.11n HT40	96.34	0.948	1.055	3KHz
802.11ac VHT80	92.81	0.465	2.151	3KHz

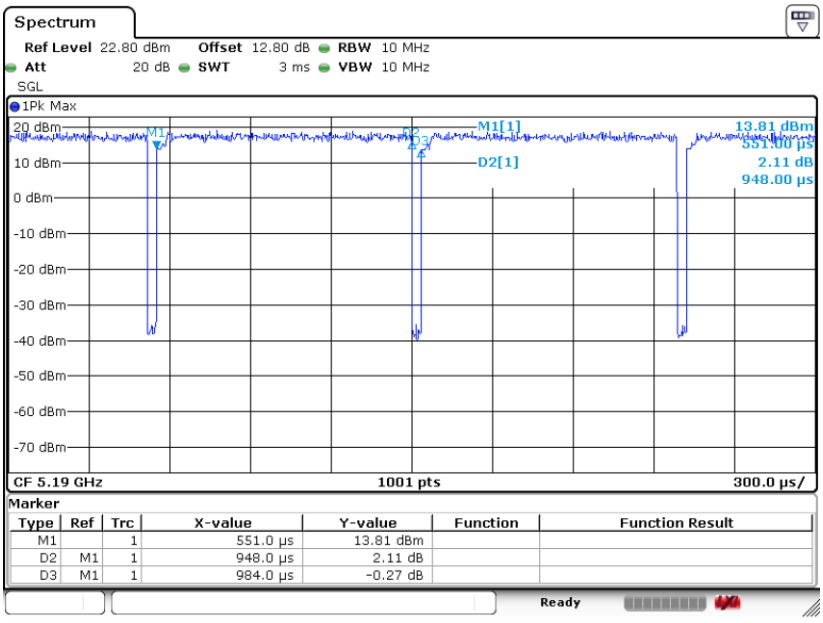
802.11a



802.11n HT20



802.11n HT40



802.11ac VHT80